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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/557,696	04/25/2000	Xiangxin Bi	N19.12-0035	8550

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EXAMINER
GORDON, BRIAN R

ART UNIT	PAPER NUMBER
1743	12

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Please find below and/or attached an Office communication concerning this application or proceeding.

ME/12

Office Action Summary	Application No. 09/557,696	Applicant(s) BI ET AL.	
	Examiner Brian R. Gordon	Art Unit 1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14,38-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,10,12,38-44,53,54,56 and 57* is/are rejected.

7)☒ Claim(s) *5-9, 11, 13-15, and 45-57* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 25, 2002 have been fully considered. With respect to applicant's arguments to the Final Rejection of claim 38 in Paper No. 10 has been noted and the examiner has agreed to withdrawn the previous Final Rejection and issue this subsequent Office Action.

2. Applicant's arguments have been fully considered but they are not persuasive. With respect to the 103 rejection of claims 1-4, 10, 12, and 38-44, applicant argues that Marsh et al. does not provide motivation to employ the use of a plurality of collectors for the collection of the particles and that Marsh lacks discussion of changing feed and other inputs while continuing to operate the disclosed reactor system. The examiner respectfully disagrees with applicant and asserts that Marsh does disclose proper motivation for the use of a plurality of collectors. In column 3 lines 26-42, Marsh discloses that the device or process is used to produce different products. The powders may be used as pigments or thickeners, as filters, as binders, etc. In column 5 lines 3-35, Marsh further discloses the desire to produce particles of different sizes by using different reactants to change the pH of the mixture. The examiner asserts that the motivation for use of a plurality of collectors is obviated by the fact the Marsh discloses that one (different customers) may desire products of different properties (pore volume, surface area, particle size, etc.) therefore it would have also been obvious to separate the products as they are produced to one's desired specifications. The collecting of the particles in different containers would allow for the prevention of mixing different

products. As to the discussion of changing feed and other inputs while continuing to operate the disclosed reactor system, the examiner asserts that this is an issue that is not included within the addressed claims. As to the design or modification of the device of Marsh et al. to comprise a plurality of collectors, it is well known in the art that various transport apparatuses may be employed to provide collectors at the outlets of units 14, 19 (Marsh, Figure 1) to collect the product as it is dispensed. For reasons given above the 103 rejections of the addressed claims are hereby maintained.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-4, 10, 12, 38-44, 53-54, and 56-57 are rejected under 35 U.S.C. 103(a) as being obvious over Marsh et al. US 4,649,037.

Marsh et al. discloses a method in which inorganic metal oxides having high surface area and pore volume are prepared by spray drying. The process of producing metal oxide powders which comprises: (a) admixing reactants comprising an organic solvent, at least one hydrolyzable metal compound, and a sufficient amount of water to at least partially hydrolyze said hydrolyzable metal compound; (b) supplying the admixture as a plurality of droplets to a heating zone (radiating heat source) operated under conditions of temperature and pressure below the critical temperature and pressure of the reactants but sufficient to produce a product comprising metal oxide powders, and a gas comprising organic solvent vapors; (c) separating said product from said gas; and, (d) collecting the product. Different reactants may be added to the stream admixture (solution or gel) in order to produce a product of different properties.

FIG. 1 schematically illustrates an indirect heated, closed cycle spray drying apparatus (operated by Bowen Engineering Inc., Somerville, N.J.) of the type preferably employed in producing our novel metal oxide powders. As illustrated, the gel (one form of the admixture) is supplied to a supply line 1. Compressed gas is applied via a line 2 to aid in feeding the admixture to the spray dryer. Optionally, cooling water is fed via a

line 3 to cool the supply line 5 used to deliver the admixture to spray drying chamber 9, thus preventing premature vaporization of the admixture in the nozzle. Nitrogen (or some other "non-oxygen containing" gas; i.e., a gas having a maximum O.sub.2 content less than or equal to about 0.1%, and preferably less than the lower explosion limit for the solvent) is supplied via a line 4 to the spray drying chamber 9 to function as the drying medium. In operation, the nitrogen is initially cycled through the system and thereafter continuously recycled with make-up nitrogen being supplied through the nozzle 4 as needed. The nitrogen is heated to the appropriate drying temperature in a preheater 7 (e.g., a steam heater) and is supplied (cocurrently) to the spray drying chamber 9 through a line 7 and circumferential supply opening 8. The gel is fed through the line 1 (via the compressed gas supplied through line 2) to the supply line 5 which feeds the gel through a nozzle 10. Within the spray drying chamber 9 is a rotating wheel or disk 11 which functions to atomize the gel. In spray drying chamber 9, a product comprising metal oxide powders, and vapors comprising water and organic solvent are produced from the gel. The product and vapors are pumped through outlet 12 and supply line 13 to a separater 14 (e.g., a cyclone separator) wherein the product is separated from the vapor. The product is removed from the separator via outlet 15. The vapor, containing reaction product fines is drawn off through take-off vent 16 and supplied by a line 17 through a nozzle 18 to a baghouse 19. In the baghouse 19, the product fines are collected and removed via outlet 20.

Marsh et al. does not specifically recite that the device comprises a plurality of collectors; however, it would have been obvious to one of the ordinary skill in the art to

recognize that in varying the reactants of the system different collectors or containers would be necessary to collect the different products from outlet 20 of the system in order to avoid mixing the products or cross contamination.

Allowable Subject Matter

7. Claims 5-9, 11, 13-14, 45-52, and 55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Marsh et al. does not disclose a method for obtaining a plurality of quantities to compositions wherein the method comprises providing an apparatus that has a nozzle that moves relative to the plurality of collectors and wherein the nozzle is moved relative to the first collector and second collector; or a radiation path defined by a radiation source (infrared laser) and directing optical elements wherein the reacting of the fluid reactants involves interacting radiation source with the reactants. The apparatus comprises pumps and valves that allow for the first collector to be exposed to the forces of the pump while the first particles are collected and the second collector is exposed to the forces of the pump while the second particles are collected. The step of introducing the reactants into a reaction zone through a plurality of inlets or nozzles to allow for mixing.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is (703) 305-0399. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 703-308-4037. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7719 for regular communications and (703) 305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

brg
February 25, 2002

Jill Warden
Supervisory Patent Examiner
Technology Center 1700